Maryland Historical Trust

Maryland Inventory of Historic Properties number: SM-507

Name: MD 242 (COLTON PT. RD) OVER ST. CLEMENTS CREEK.

The bridge referenced herein was inventoried by the Maryland State Highway Administration as part of the Historic Bridge Inventory, and SHA provided the Trust with eligibility determinations in February 2001. The Trust accepted the Historic Bridge Inventory on April 3, 2001. The bridge received the following determination of eligibility.

MARYLAND HISTORICAL TRUST

Eligibility Recommended ______ Eligibility Not Recommended __X___

Criteria: ___A ___B _X_C ___D Considerations: __A __B __C __D __E __F __G __None

Comments:

Reviewer, OPS: Anne E. Bruder Date: 3 April 2001

Reviewer, NR Program: Peter E. Kurtze Date: 3 April 2001

MARYLAND INVENTORY OF HISTORIC BRIDGES
HISTORIC BRIDGE INVENTORY
MARYLAND STATE HIGHWAY ADMINISTRATION/
MARYLAND HISTORICAL TRUST

MHT No. SM-507

SHA Bridge No. 18020 **Bridge name** MD 242 (Colton Point Road) over St. Clements Creek

LOCATION:
Street/Road name and number [facility carried] MD 242 (Colton Point Road)

City/town Clements **Vicinity** X

County St. Mary's

This bridge projects over: **Road** __ **Railway** __ **Water** X **Land** ____

Ownership: **State** X **County** ____ **Municipal** ____ **Other** ____

HISTORIC STATUS:
Is the bridge located within a designated historic district? **Yes** ____ **No** X
National Register-listed district ____ **National Register-determined-eligible district** __
Locally-designated district ____ **Other** ____

Name of district ____

BRIDGE TYPE:
Timber Bridge X:
Beam Bridge ____ **Truss -Covered** ___ **Trestle** ___ **Timber-And-Concrete** X

Stone Arch Bridge ____

Metal Truss Bridge ____

Movable Bridge ____:
Swing ____ **Bascule Single Leaf** __ **Bascule Multiple Leaf** ____
Vertical Lift ____ **Retractile** ____ **Pontoon** ____

Metal Girder ____:
Rolled Girder ____ **Rolled Girder Concrete Encased** ____
Plate Girder ____ **Plate Girder Concrete Encased** ____

Metal Suspension ____

Metal Arch ____

Metal Cantilever ____

Concrete ____:
Concrete Arch ____ **Concrete Slab** ____ **Concrete Beam** ____ **Rigid Frame** ____
Other ____ **Type Name** ____

DESCRIPTION:

Setting: Urban ______ **Small town** ______ **Rural** X

Describe Setting:

Bridge No. 18020 carries Maryland Route 242 (Colton Point Road) over St. Clements Creek in St. Mary's County. Maryland Route 242 runs north-south and St. Clements Creek flows from the northeast to the southwest. The bridge is located in the vicinity of Clements, and is surrounded by a wooded area.

Describe Superstructure and Substructure:

Bridge No. 18020 is a five-span, two-lane, composite timber and concrete bridge. The bridge was originally built in 1937, and steel jackets were added to the pilings in 1992. The structure is 30.9 meters (101.5 feet) long and has a clear roadway width of 9.1 meters (30 feet); there are no sidewalks. The out-to-out width is 10.3 meters (33.9 feet). The superstructure consists of four timber beams which support a composite timber and concrete deck and concrete and timber rails. The concrete deck has a bituminous wearing surface. The structure has reinforced concrete and timber railings. The square concrete posts and cyma curve endposts have Art Deco detailing, the horizontal timber rails are replacements of the original concrete rails. The roadway approaches are in good condition. A painted number on the endpost identifies the bridge. The substructure consists of two timber abutments and four 7-pile timber bents spaced at 5.5 meter (18 foot) intervals. There are no wingwalls. The bridge is posted for 23.5 tonnes (26 tons) for a single unit, 36.2 tonnes (40 tons) for a combination unit, and has a sufficiency rating of 25.

According to the 1997 inspection report, this structure was in poor condition with a rotting timber deck, and deterioration of the timber substructure, including piles, cross-braces, and abutments. The asphalt wearing surface is in good condition. The concrete railing is spalling along the curbs. Also, the concrete railing is scaling along the top, and the horizontal concrete rails have been replaced with timber boards.

Discuss Major Alterations:

The timber rails replaced the original concrete rails in 1985. The piling jackets and bent repairs were undertaken in 1986 and 1993. Inspection reports from 1997 detail decay within the bents and cross-bracing, despite the pile repairs made in 1992.

HISTORY:

WHEN was the bridge built: 1937
This date is: Actual X **Estimated** ______
Source of date: Plaque ___ **Design plans** ___ **County bridge files/inspection form** ___
Other (specify): SHA bridge files/inspection reports

WHY was the bridge built?

The bridge was constructed in response to the need for more efficient transportation network and increased load capacity.

WHO was the designer?

State Roads Commission

WHO was the builder?

State Roads Commission

WHY was the bridge altered?

The bridge was altered to ensure its structural integrity and to correct functional or structural deficiencies

Was this bridge built as part of an organized bridge-building campaign?

The bridge was constructed by the State, as part of a campaign to improve Tidewater highways and crossings over bodies of water during the late 1930s.

<u>SURVEYOR/HISTORIAN ANALYSIS:</u>

This bridge may have National Register significance for its association with:
A - Events _________ **B- Person** ____________
C- Engineering/architectural character __________

The bridge does not have National Register significance.

Was the bridge constructed in response to significant events in Maryland or local history?

The earliest bridges built in North America were timber bridges. According to one account, European settlers at first utilized the bridges constructed by the Native American populations, which consisted of tied timbers laid across up-turned forked tree trunks (American Association of State Highway Officials 1953: 19). This design was adopted by the settlers, who then modified the design by hewing the upper portions of the timbers to provide a flat surface and by adding a handrail to one side (American Society of Civil Engineers 1976: 143). Where crossings exceeded the length of the available timber, short spans were joined and supported on wood piles or on timber cribs filled with earth or stone. In fact, the earliest recorded bridge built by European settlers in America was most likely this type of design. Constructed in 1611 on James Towne Island, Virginia, this timber bridge extended approximately 200 feet into the water and provided docking facilities in the 12 foot deep channel (American Association of State Highway Officials 1953: 19).

The combination of timber with other materials began with the invention of the Howe truss in 1840. William Howe patented a truss which utilized iron verticals as tension members and wood diagonals as compression members. The Howe truss became a standard of railroad bridge design. By the 1860s, the problem of wood deterioration was under better control with the invention of pressure creosote treatments, which extended the life of the wood members. Timber pile bent structures remained popular, in particular in tidal areas, into the twentieth century. These were most often used in combination with concrete.

Timber bridges continued to be constructed in the United States during the twentieth century. A significant technological development of the 1930s permitted construction of timber-concrete composite structures, featuring decks utilizing both timber and reinforced concrete. The 1975 American Society of Civil Engineers <u>Design Guide and Commentary on Wood Structures</u> offered the following description of composite decks of timber and concrete:

> Composite timber-concrete decks are commonly used in bridge construction. Construction is such that timber carries most of the tension forces. Composite construction is of two basic types, T-beams and slab decks.... Composite T-beam sections consist of timber stringers, which form the stem, and concrete slab for the flange area. Notches are cut into the top edge of the stringers to resist horizontal shear and mechanical fasteners are driven into the top to prevent vertical separation so that the two components perform integrally. Stresses due to temperature changes must be considered in the concrete section.
>
> Composite slabs consist of nominal 2-inch lumber, usually nailed-laminated with the wide faces vertical, and a concrete section cast monolithically in place. Grooves are formed by using alternate laminations that differ in width by 2 inches or by fabricating panels with a 2-inch offset between laminations. Horizontal shear is resisted by grooves cut into the projecting laminations or by metal shear plates. Transverse joints in the timber portion are made by dapping or cutting alternate laminations to a different length to provide finger joints. The concrete slab should be reinforced for temperature stress and for negative bending stresses when the deck is continuous over a support. No falsework or extensive forming is necessary with this construction (American Society of Civil Engineers 1975:372-73).

The timber-concrete composite slab type of bridge construction was pioneered in the United States by James F. Seiler and the American Wood-Preservers Association between 1932 and 1935. The latter organization's 1935 patent for "composite wood and concrete construction" became the basis for such technology.

Such timber-and-concrete composite structures were evidently introduced in Maryland by the State Roads Commission engineers, who kept abreast of early twentieth century trends in composite bridge design. In the 1937-1938 *Report of the State Roads Commission*, Bridge Division Chief Engineer Walter C. Hopkins acknowledged professional interest in such structures:

> The bridges constructed have been varied, with miscellaneous types and of different materials. Bridges have been built of concrete, steel, timber, or stone, or combinations thereof. Careful study is given the employment of those materials most satisfactorily adapted to the structure in question. Balance, proportion and treatment that will result in simplicity, gracefulness and pleasing appearance are always considered and sought by the designer (State of Maryland, State Roads Commission 1938:71).

The Bridge Division's earliest timber-and-concrete composite bridges were built in 1937-1938 in Tidewater Maryland. Three such bridges were constructed in Wicomico County, and one each in Calvert, St. Mary's, Queen Anne's, Kent, and Caroline counties. Pictured in the 1937-1938 State Roads Commission report, the longest such bridge was "a timber and concrete composite bridge of twelve 20-foot spans, providing a clear roadway of 26 feet, and two 3-foot, 1-inch sidewalks, over Tony Tank Pond, on the road from Salisbury to Princess Anne near Salisbury, Wicomico County" (State of Maryland, State Roads Commission 1938:83).

Subsequent State Roads Commission reports refer to additional timber-concrete composite bridges constructed under state authority between 1939 and 1960, primarily at Tidewater (Coastal Plain) sites on the Eastern Shore and in Southern Maryland (State of Maryland, State Roads Commission 1939:71; 1943:45). In 1947, Bridge Division engineers observed that "the development of the composite use of timber and concrete has permitted the design of economical structures with the general appearance from the roadway of a much more costly bridge" (State of Maryland, State Roads Commission 1947:53).

When the bridge was built and/or given a major alteration, did it have a significant impact on the growth and development of the area?

There is no evidence that the construction of this bridge had a significant impact on the growth and development of this area.

Is the bridge located in an area which may be eligible for historic designation and would the bridge add to or detract from the historic/visual character of the potential district?

The bridge is located in an area which does not appear to be eligible for historic designation.

Is the bridge a significant example of its type?

Composite timber and concrete bridges should possess character-defining elements, including concrete railings and composite timber and concrete decks. Other important features include timber support systems consisting of timber bents or piles. In addition, the structure must be in excellent condition. This bridge, which has had such features as the railing altered, and has considerable deterioration of the timber substructure, is an undistinguished example of a composite timber and concrete bridge.

Does the bridge retain integrity of important elements described in Context Addendum?

The bridge retains many of the character-defining elements of its type, however, the integrity of these elements has been compromised by modern alterations such as the replacement of the horizontal concrete rails with timber rails, and severe deterioration of the timber substructure and vertical concrete railing posts and curbs.

Is the bridge a significant example of the work of a manufacturer, designer, and/or engineer?

This bridge is not a significant example of the work of a manufacturer, designer, and/or engineer.

Should the bridge be given further study before an evaluation of its significance is made?

No further study of this bridge is required to evaluate its significance.

BIBLIOGRAPHY:

County inspection/bridge files ______ **SHA inspection/bridge files** X
Other (list):

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1908 *The Design of Highway Bridges and the Calculation of Stresses in Bridge Trusses.* The Engineering News Publishing Co., New York.

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1992 *Ways of the World: A History of the World's Roads and of the Vehicles That Used Them.* Rutgers University Press, New Brunswick, New Jersey.

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Luten, Daniel B.
1912 Concrete Bridges. *American Concrete Institute Proceedings* 8:631-640.

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1930a *Report of the State Roads Commission for the Years 1927, 1928, 1929 and 1930*. State of Maryland, State Roads Commission, Baltimore.

1930b *Standard Plans*. State of Maryland, State Roads Commission, Baltimore.

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Historic Highway Bridges in Maryland: Historic Context Report. Prepared for the Maryland State Highway Administration.

Taylor, Frederick W., Sanford E. Thompson, and Edward Smulski
1939 *Reinforced-Concrete Bridges with Formulas Applicable to Structural Steel and Concrete*. John Wiley & Sons, Inc., New York.

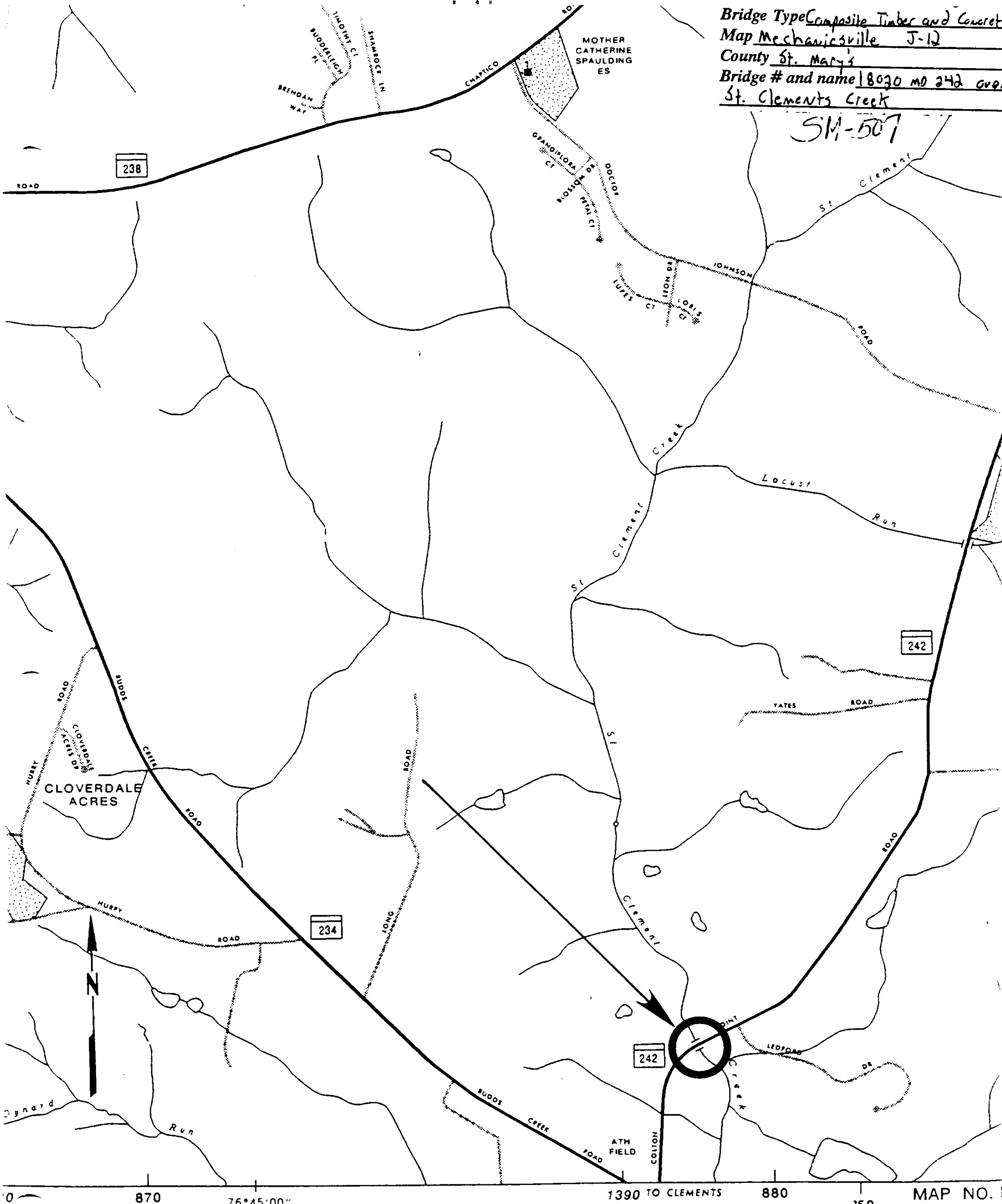
Tyrrell, H. Grattan
1909 *Concrete Bridges and Culverts for Both Railroads and Highways*. The Myron C. Clark Publishing Company, Chicago and New York.

SURVEYOR:

Date bridge recorded 7/22/97
Name of surveyor Caroline Hall/Susan Taylor
Organization/Address P.A.C. Spero & Co., 40 W. Chesapeake Avenue, Suite 412, Baltimore, MD 21204 **Phone number** (410) 296-1635 **FAX number** (410) 296-1670

Bridge Type Composite Timber and Concrete
Map Mechanicsville J-12
County St. Mary's
Bridge # and name 18030 MD 242 over St. Clements Creek

SM-507



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NORTH
SCALE

PREPARED BY THE

MARYLAND DEPARTMENT OF TRAN
STATE HIGHWAY ADMINISTRATI(
IN COOPERATION WITH THE


1802000

INDIVIDUAL PROPERTY/DISTRICT
MARYLAND HISTORICAL TRUST
INTERNAL NR-ELIGIBILITY REVIEW FORM

Property/District Name: Bridge No. 18020, MD 242 over Clement Crk Survey Number: SM-507

Project: Proj. No. SM784B212, Bridge Replacement Agency: SHA/FHWA

Site visit by MHT Staff: XX no ___ yes Name ______________ Date ______________

Eligibility recommended _____ Eligibility **not** recommended XX

Criteria: ___A ___B XXC ___D Considerations: ___A ___B ___C ___D ___E ___F ___G ___None

Justification for decision: (Use continuation sheet if necessary and attach map)

MD 242 over Clement Creek, Clements vicinity, St. Mary's County, MD, is a 5 span, wood and concrete beam bridge on timber piles. It was built in 1937 and since that time has received extensive repairs, as is typical for this kind of bridge. In 1986, 8 piles were spliced and strengthened with steel pile jackets. In 1991, the concrete ırapets were replaced with wooden railings. In 1992, steel pile jackets were attached to more piles. All of this activity has compromised the integrity of the bridge and thus makes it ineligible for the National Register under Criterion C. Furthermore, there are no known associations with persons or events important in American history and therefore the bridge is not eligible under Criteria A or B. Lastly, there are no archeological sites which would likely yield additional information about the past, thus making the bridge ineligible under Criterion D.

Documentation on the property/district is presented in: Project Review and Compliance Files

Prepared by: Rita Suffness, SHA

Anne E. Bruder 1/21/98
Reviewer, Office of Preservation Services Date

NR program concurrence: X yes ___ no ___ not applicable

Peter E. Kurtze 1/23/98
Reviewer, NR program Date

gmg

Survey No. SM-507

MARYLAND COMPREHENSIVE HISTORIC PRESERVATION PLAN DATA - HISTORIC CONTEXT

I. Geographic Region:

_____	Eastern Shore	(all Eastern Shore counties, and Cecil)
XX	Western Shore	(Anne Arundel, Calvert, Charles, Prince George's and St. Mary's)
_____	Piedmont	(Baltimore City, Baltimore, Carroll, Frederick, Harford, Howard, Montgomery)
_____	Western Maryland	(Allegany, Garrett and Washington)

II. Chronological/Developmental Periods:

_____	Paleo-Indian	10000-7500 B.C.
_____	Early Archaic	7500-6000 B.C.
_____	Middle Archaic	6000-4000 B.C.
_____	Late Archaic	4000-2000 B.C.
_____	Early Woodland	2000-500 B.C.
_____	Middle Woodland	500 B.C. - A.D. 900
_____	Late Woodland/Archaic	A.D. 900-1600
_____	Contact and Settlement	A.D. 1570-1750
_____	Rural Agrarian Intensification	A.D. 1680-1815
_____	Agricultural-Industrial Transition	A.D. 1815-1870
_____	Industrial/Urban Dominance	A.D. 1870-1930
XX	Modern Period	A.D. 1930-Present
_____	Unknown Period (___ prehistoric ___ historic)	

III. Prehistoric Period Themes:

_____ Subsistence
_____ Settlement

_____ Political
_____ Demographic
_____ Religion
_____ Technology
_____ Environmental Adaptation

IV. Historic Period Themes:

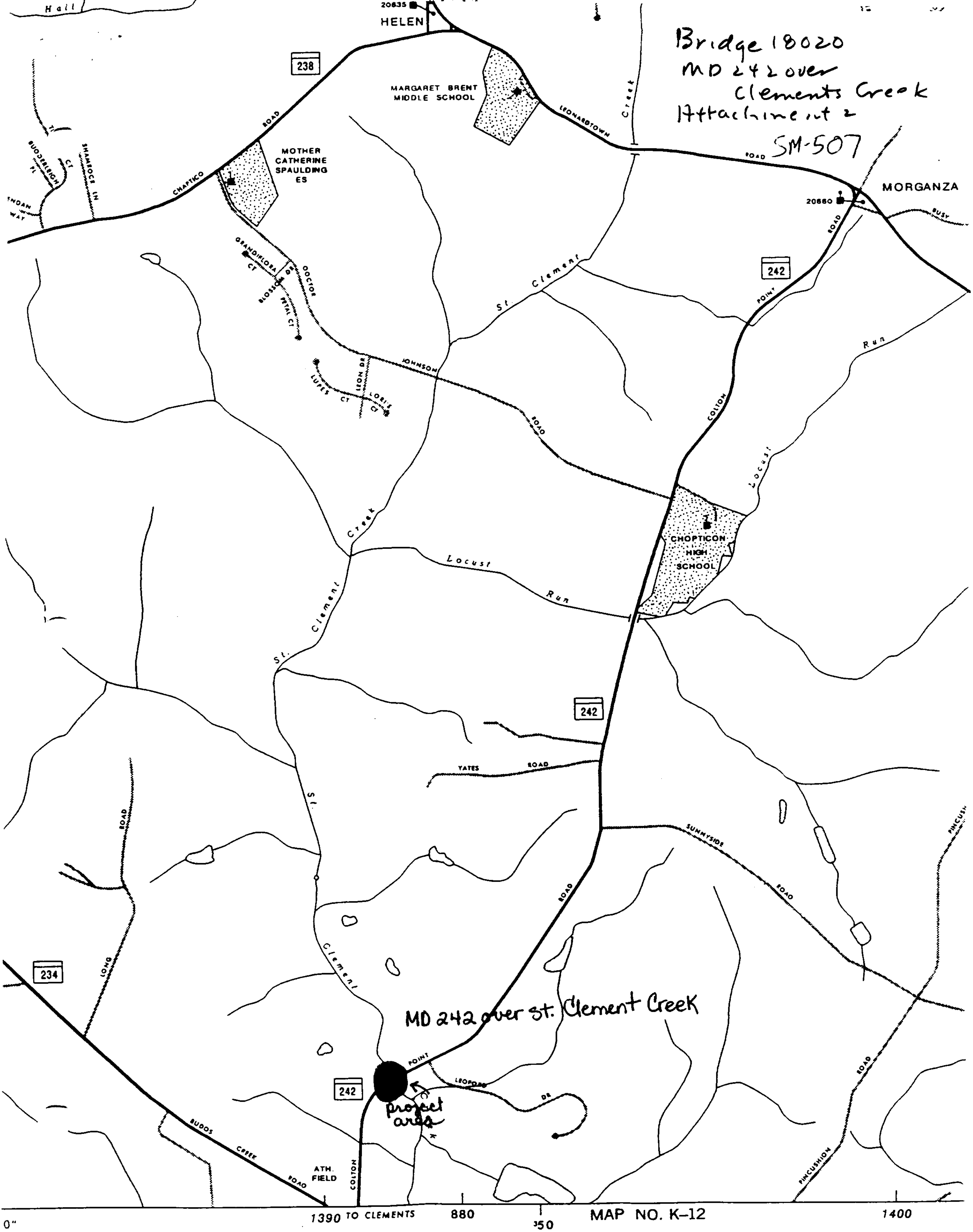
_____ Agriculture
XX Architecture, Landscape Architecture, and Community Planning
_____ Economic (Commercial and Industrial)
_____ Government/Law
_____ Military
_____ Religion
_____ Social/Educational/Cultural
XX Transportation

V. Resource Type:

Category: Structure
Historic Environment: Rural
Historic Function(s) and Use(s): Bridge/Transportation/Creek Crossing

Known Design Source: ____________

Bridge 18020
MD 242 over
Clements Creek
Attachment 2
SM-507



Bridge 18020
Attachment 3 Page 1
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MD 242 over Clement Run # 1802

East End

Looking North

Structure # 1802

SM-507

West side, steel beams with pile jackets